

LISTING OF THE CLAIMS

This listing of claims is presented as a courtesy to the Examiner.

1. (Previously Presented) An oil pump rotor assembly comprising:
an inner rotor having “n” external teeth (“n” is a natural number); and
an outer rotor having (n+1) internal teeth which are engageable with the external teeth,
wherein the oil pump rotor assembly is used in an oil pump which, during rotation of the inner and outer rotors, draws and discharges fluid by volume change of cells formed between the external teeth of the inner rotor and the internal teeth of the outer rotor engaging therewith,
wherein the volumes of the cells increase along a rotational direction of the inner rotor and the outer rotor,
wherein clearances defined between the external teeth and the internal teeth engaging therewith also increase along the rotational direction,
wherein when the clearances are defined such that: one of the clearances that corresponds to the cells having the minimum volume is designated as “a”; another clearance that corresponds to the cell having the maximum volume is designated as “c”; and the other clearances that correspond to the cell whose volume is increasing during rotation of the inner rotor and the outer rotor and are arranged between the clearance “a” and the clearance “c” are designated as “b”, the following inequalities are satisfied:

wherein when the clearance “b” of the cell positioned backward as viewed in the direction of rotation is further designated as “b1”, and the clearance “b” in the cell positioned forward as viewed in the direction of rotation is further designated as “b2”, the following inequality is satisfied:

wherein when the clearance “d” in the cell positioned backward as viewed in the direction of rotation is further designated as “d1”, and the clearance “d” in the cell positioned forward as viewed in the direction of rotation is further designated as “d2”, the following inequality is satisfied:

an outer rotor having (n+1) internal teeth which are engageable with the external teeth,

each tooth profile of the outer rotor is formed such that a tip profile thereof is formed using an epicycloid curve which is formed by rolling a second circumscribed-rolling circle A_o along a base circle D_o without slip, and the tip profile thereof is formed using a hypocycloid curve which is formed by rolling a second inscribed-rolling circle B_o along the base circle D_o without slip.

6. (Previously Presented) An oil pump rotor assembly according to Claim 1, wherein tooth surfaces of the inner rotor are formed using a trochoid envelope curve which is formed by moving a trajectory circle, whose center is positioned on a trochoid curve, along the trochoid curve, and the tooth tips of the outer rotor are formed using an arc having the same radius as that of the trajectory circle.

7. (Cancelled)

8. (Previously Presented) An oil pump rotor assembly according to Claim 1, wherein each tooth profile of the inner rotor is formed such that a tip profile thereof is formed using an epicycloid curve which is formed by rolling a first circumscribed-rolling circle D_i along a base circle “ b_i ” without slip, and a tooth space profile thereof is formed using a hypocycloid curve which is formed by rolling a first inscribed-rolling circle “ d_i ” along the base circle “ b_i ” without slip, and each tooth profile of the outer rotor is formed such that a tip profile thereof is formed using an epicycloid curve which is formed by rolling a second circumscribed-rolling circle

10. (Previously Presented) The oil pump rotor assembly according to Claim 9, wherein the value “c” is in the following range:

$$0.040 \text{ mm} \leq c \leq 0.150 \text{ mm}.$$